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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/763,127	01/22/2004	Joel Woodcock	NSD2003-001	4196

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WESTINGHOUSE ELECTRIC COMPANY, LLC
P.O. BOX 355
PITTSBURGH, PA 15230-0355

EXAMINER	
ZECHER, MICHAEL R	

ART UNIT	PAPER NUMBER
3691	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/763,127	WOODCOCK ET AL.	
	Examiner	Art Unit	
	MICHAEL R. ZECHER	3691	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 January 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. The following is a final Office Action on the merits. The Arguments/Remarks received on January 30, 2008, have been entered. **Claims 1-10** are pending.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. **Claims 1-3, & 7-10** are rejected under 35 U.S.C. 102(b) as being anticipated by Klimasauskas (U.S. 6,110,214).

As per claim 1, Klimasauskas teaches a method of characterizing a number of potential financial benefits to a facility, each potential financial benefit resulting from the potential performance of one of a number of groups of possible activities on the facility (See column 21, lines 25-40, which discusses using the analyzer for business time series, financial modeling, etc.), the method comprising:

determining a number of goals, the achievement or partial achievement of which would affect a financial status of the facility (See column 21, lines 15-24, which discusses changing optimization goals to suit a particular process of interest);

identifying for each goal a corresponding groups of activities, each identified activity affecting in some fashion achievement of the goal (See column 18, lines 32-43, which discusses defining an objective function for each maintenance activity); and

for each group of activities, determining a probability distribution on net present saving that corresponds with implementation of the group of activities (See column 20, lines 45-56, which discusses how the analyzer determines the net savings achieved).

As per claim 2, Klimasauskas teaches wherein said determining a probability distribution on net present savings that corresponds with implementation of the group of activities comprises:

determining a baseline of activity with regard to the facility (See column 9, line 52, through column 10, line 11, which discusses selecting candidate transformations for derived variables);

identifying a number of operational parameters related to the facility that have an effect on the financial status of the facility, each operational parameter having an uncertainty (See column 14, lines 1-4, and claim 1, which discusses input parameters for one or more activities);

for each operational parameter, characterizing the operational parameter based upon an assumption of the baseline activity, the characterized operational parameter having an uncertainty (See claim 1, which discusses how the primary analyzer applies input parameters and derived variables to generate outputs corresponding to an activity);

for each operational parameter, characterizing the operational parameter based upon an assumption of implementation of the group of activities, the characterized operational parameter having an uncertainty (See claim 1, which discusses how the

primary analyzer applies input parameters and derived variables to generate outputs corresponding to an activity);

performing a plurality of probabilistic simulation sampling trials on the operational parameters that were characterized based upon the assumption of baseline activity and on the operational parameters that were characterized based upon the assumption of implementation of the group of activities (See column 19, lines 15-38, which discusses optimizing the model using manipulated variables; and, how other techniques such as Monte Carlo may be implemented);

determining a net present savings amount for each trial (See column 20, lines 45-56, which discusses how the analyzer determines the net savings achieved); and

compiling the net present savings amounts from all of the trials corresponding with the group of activities to form the probability distribution on net present savings that corresponds with implementation of the group of activities (See column 20, line 45, through column 21, line 6, which discusses net savings within the context of determining potential modifications to process variables that improve current performance).

As per claim 3, Klimasauskas teaches wherein said performing a plurality of probabilistic simulation sampling trials includes performing a plurality of Monte Carlo trials (See column 19, lines 15-38, which discusses implementing other techniques such as Monte Carlo).

As per claim 7, Klimasauskas teaches wherein at least one of the operational parameters with its uncertainty is also known to vary with time (See abstract and

column 19, lines 1-7, which discusses representing time-varying effects of maintenance events).

As per claim 8, Klimasauskas teaches wherein said at least one of the operational parameters is an equipment failure rate that is known to vary with time (See column 1, lines 40-50, and column 3, lines 20-27, which discusses equipment failure that could affect the integrity of the plant, and maintenance data collected as a result of system failure/degradation).

As per claim 9, Klimasauskas teaches wherein said identifying for each goal a corresponding group of activities includes identifying for each goal a set of activities which together comprise a strategy for achieving the corresponding goal (See column 21, lines 15-24, which discusses changing optimization goals to suit a particular process of interest).

As per claim 10, Klimasauskas teaches wherein the activities of at least one of the sets of activities together have a synergy (See column 9, line 65, through column 10, line 12, which discusses selecting specific transformations for derived variables because of the kind of relationships typically found in modeling physical processes).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. **Claims 4-6** is rejected under 35 U.S.C. 103(a) as being unpatentable over Klimasauskas (U.S. 6,110,214), in view of Gray (2003/0093347).

As per claim 4, Klimasauskas teaches utilizing the Monte Carlo technique when determining potential financial benefits. However, Klimasauskas does not expressly disclose wherein each said Monte Carlo trial comprises:

for each operational parameter that was characterized based upon the assumption of baseline activity, generating a random number, the random number determining a baseline value for the operational parameter within its uncertainty;

calculating a baseline financial effect on the financial status of the facility on the basis of the baseline operational parameter values;

discounting the baseline financial effect to achieve a present day baseline value;

for each operational parameter that was characterized based upon the assumption of implementation of the group of activities, generating a random number, the random number determining a strategy value for the operational parameter within its range of uncertainty;

calculating a strategy financial effect on the financial status of the facility on the basis of the strategy operational parameter values;

discounting the strategy financial effect to a present day strategy value; and

subtracting the present day strategy value from the present day baseline value to determine the net present saving amount for the trial.

Gray discloses calculating and assessing the economic financial risk associated with government and monetary authorities (See abstract).

Both Klimasauskas and Gray disclose methods for determining financial benefits utilizing the Monte Carlo technique. Gray teaches generating parameters to derive prices and values for a respective financial model. Furthermore, the financial model may be calibrated by taking into account relative changes (See paragraphs 373 & 374, which discusses utilizing the Monte Carlo technique to arrive at transaction values). Therefore, it would have been obvious to one or ordinary skill in the art at the time the invention was made to modify Klimasauskas to include numerous Monte Carlo trials for determining cost savings, whereby the Monte Carlo technique is calculated using an aggregation of mathematical operations, as taught by Gray in order to determine potential modifications to process variables that may improve current facility performance.

As per claim 5, Klimasauskas teaches wherein said characterizing the operational parameter based upon an assumption includes characterizing the operational parameter with a probability density function (See column 15, line 45, through column 16, line 12, which discusses a kernel density estimator).

As per claim 6, Klimasauskas teaches the probability density function of the operational parameter (See column 15, line 45, through column 16, line 12, which discusses a kernel density estimator). However, Klimasauskas does not expressly disclose that for each operational parameter, the random numbers generated over the course of the plurality of Monte Carlo trials result in a set of values for the operational parameter that are distributed in accordance with the probability density function of the operational parameter.

Gray teaches generating parameters to derive prices and values for a respective financial model. Furthermore, the financial model may be calibrated by taking into account relative changes (See paragraphs 373 & 374, which discusses utilizing the Monte Carlo technique to arrive at transaction values). Therefore, it would have been obvious to one or ordinary skill in the art at the time the invention was made to modify Klimasauskas to include numerous Monte Carlo trials for determining cost savings, whereby parameter values are distributed utilizing a kernel density estimator, as taught by Gray in order to determine potential modifications to process variables that may improve current facility performance.

Response to Arguments

6. Applicant's arguments filed January 30, 2008, have been fully considered but they are not persuasive.

In the Remarks, the applicant argues in substance that:

(a) Klimasauskas does not teach, suggest, or disclose determining a probability distribution of net present savings that corresponds with implementation of the group of activities.

(b) Klimasauskas does not teach, suggest, or disclose characterizing operational parameters based upon the assumption of baseline activity and on the operational parameters that were characterized based upon the assumption of implementation of the group of activities.

(c) Kilmasauskas does not teach, suggest, or disclose performing a plurality of probabilistic simulation sampling trials that includes performing a plurality of Monte Carlo trials.

(d) Kilmasauskas does not teach, suggest, or disclose identifying for each goal a set of activities which together comprise a strategy for achieving a corresponding goal.

(e) Kilmasauskas does not teach, suggest, or disclose wherein the activities for at least one of the sets of activities together have a synergy.

(f) Gray does not teach, suggest, or disclose generating random numbers, the calculating of a baseline financial effect, the discounting of a baseline financial effect to a present day baseline value, the calculating of a strategy of financial effect, the discounting of a strategy financial effect to present day strategy value, or the subtracting of a present day strategy value from a present day baseline value to determine a net presence savings amount for a trial.

(g) Klimasauskas does not teach, suggest, or disclose characterizing the operational parameter with a probability density function.

(h) Gray does not teach, suggest, or disclose the generation of random numbers that are distributed in accordance with the probabilistic density function of the operational parameters.

In response to (a):

Examiner respectfully disagrees with applicant's assertions. In regards to whether Klimasauskas is directed solely towards optimization, Examiner points applicant to the field of invention which expressly states that the system is oriented

towards modeling and optimizing (col. 1, lines 11-15). Although Klimasauskas is oriented towards suggesting optimal activities, it expressly teaches modeling with respect to the optimal activities.

Examiner reiterates that Klimasauskas discloses net present savings within the context of implementing a group of activities (See col. 20, lines 45-56). Although this indicated passage speaks in terms of computer code, it suggests that a net savings is calculated based on a set of implemented maintenance activities. For clarification purpose, Klimasauskas also discloses that a first model or first analyzer works in conjunction with regression analyzers and fuzzy PLS analyzers to determine potential modifications to process variables in order to improve current performance (See col. 20, line 57, through col. 21, line 6). These passages provide support that Klimasauskas anticipates probabilistic modeling with respect modification of process variables (i.e. cost) in order to improve performance by accounting for the net savings of implemented activities.

In response to (b):

Examiner respectfully disagrees with applicant's assertion. First, applicant's arguments fail to comply with 37 CFR 1.111(b) because they amount to a general allegation that the claims define a patentable invention without specifically pointing out how the language of the claims patentably distinguishes them from the references.

Second, in furtherance of prosecution, Examiner refers applicant to the preamble of claim 1 which expressly contemplates modeling tasks having parameters in relations to one or more activities (See claim 1). Hence, this disclosure expressly contemplates

characterizing parameters both based on a single or baseline activity and a group of activities.

In response to (c):

Examiner respectfully disagrees with applicant's assertion. As set forth above, Examiner points applicant to the field of invention which expressly states that the system is oriented towards modeling and optimizing (col. 1, lines 11-15). Although Klimasauskas is oriented towards suggesting optimal activities, it expressly teaches modeling with respect to the optimal activities. Klimasauskas also discusses implementing techniques, other than Dynamic Hill Climbing, such as Monte Carlo (See col. 19, lines 15-38). These passages both teach and suggest that Klimasauskas anticipates the use of the Monte Carlo technique to perform various modeling trials with respect to optimal activities.

In response to (d):

Examiner respectfully disagrees with applicant's assertion. First, applicant's arguments fail to comply with 37 CFR 1.111(b) because they amount to a general allegation that the claims define a patentable invention without specifically pointing out how the language of the claims patentably distinguishes them from the references.

Second, in furtherance of prosecution, the passage cited by Examiner is not limited to a semiconductor plant only. Klimasauskas suggests that the techniques and processes disclosed therein can be utilized in a number of plants such as oil refineries; chemical plants, power plants, and industrial manufacturing plants (See col. 21, lines 25-40). Additionally, the passage cited by Examiner teaches that goals and variables

may be changed to suit a particular process or strategy. Therefore, the referenced passages suggest and teach that activities can be identified in a power plant scenario whereby a particular process or strategy is chosen to achieve optimization goals.

In response to (e):

Examiner respectfully disagrees with applicant's assertion. First, applicant's arguments fail to comply with 37 CFR 1.111(b) because they amount to a general allegation that the claims define a patentable invention without specifically pointing out how the language of the claims patentably distinguishes them from the references.

Second, in furtherance of prosecution, synergy is defined as the combined action of two or more substances or agencies to achieve an effect greater than that of which each is individually capable (See Webster's II Dictionary). Examiner cited applicant to a passage that suggests and teaches selecting specific transformations for derived variables to arrive at a streamlined process (See col. 9, line 65, through col. 10, line 12). This teaching suggests that selecting to transform more than one variable achieves a more efficient process.

In response to (f):

Examiner respectfully disagrees with applicant's assertion. First, applicant's arguments fail to comply with 37 CFR 1.111(b) because they amount to a general allegation that the claims define a patentable invention without specifically pointing out how the language of the claims patentably distinguishes them from the references.

Second, in furtherance of prosecution, Examiner cited applicant to the disclosure in Gray in order to provide support for the application of a standardized Monte Carlo

technique (See paragraphs 373-74). The recited claim limitations simply encompass utilizing the Monte Carlo technique to arrive at transaction values, in this case a net savings amount (See Klimasauskas col. 20, line 45, through col. 21, line 6). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine these two features in order to determine potential modifications to process variables that may improve current performance. Hence, Examiner has satisfied the prima facie obligation of proving obviousness and applicant has failed to provide definitive reasons to overcome the rejection.

In response to (g):

Examiner respectfully disagrees with applicant's assertion. First, applicant's arguments fail to comply with 37 CFR 1.111(b) because they amount to a general allegation that the claims define a patentable invention without specifically pointing out how the language of the claims patentably distinguishes them from the references.

Second, in furtherance of prosecution, Klimasauskas discloses that the density estimator is capable of producing, a necessarily non-differentiable, but still useful estimate (See col. 15, lines 45, through coll. 16, line 12). Although applicant asserts that the density estimator and probability density function are completely separate approaches, applicant fails to provide guidance, thus making it impossible to address the specifics of this concern. For examination purposes, the claim limitations have been broadly construed to encompass the density estimator discussed in the cited passage.

In response to (g):

Examiner respectfully disagrees with applicant's assertion. First, applicant's arguments fail to comply with 37 CFR 1.111(b) because they amount to a general allegation that the claims define a patentable invention without specifically pointing out how the language of the claims patentably distinguishes them from the references.

Second, in furtherance of prosecution, Examiner cited applicant to the disclosure in Gray in order to provide support for the application of a standardized Monte Carlo technique (See paragraphs 373-74). The recited claim limitations simply encompass utilizing the Monte Carlo technique to arrive at transaction values. As set forth above, Klimasauskas discloses that the density estimator is capable of producing, a necessarily non-differentiable, but still useful estimate (See col. 15, lines 45, through coll. 16, line 12). Therefore, this passage in combination with the standardized Monte Carlo technique indicates to one of ordinary skill the art that it would have been obvious to combine these two features, including the generation of random numbers, to arrive at the recited claim limitations.

Conclusion

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MICHAEL R. ZECHER whose telephone number is (571)270-3032. The examiner can normally be reached on M-F 7:30-5:00 alt. Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alexander Kalinowski can be reached on 571-272-6771. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Alexander Kalinowski/
Supervisory Patent Examiner, Art Unit 3691

MRZ